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Neutrinoless double-beta decay investigations of 82Se using three shell model Hamiltonians

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Recent studies of neutrinoless double-beta decay matrix elements have employed statistical approaches based on modified shell model effective Hamiltonians for 48Ca (Phys. Rev. C 106, 054302 (2022)) and 136Xe (Phys. Rev. C 107, 045501 (2023)). The analyses rely on inducing perturbations in the starting effective Hamiltonians to observe the behavior of a wide range of observables, besides the $0\nu\beta\beta$) NME, that are compared with experimental data. Following a Bayesian Model Averaging approach, the range of probable values for the neutrinoless double-beta decay matrix elements is presented. In this paper, we present a similar study for 82Se, which is described in the same model space as 76Ge that is under experimental observation. Due to its faster calculation time compared to 76Ge, 82Se can be used as an appropriate substitute in our complex statistical study. Using the calculations performed for the statistical analysis of the neutrinoless double-beta decay matrix elements we also search for the correlations between the observables that we can compare to experimental data.

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